Amendments to the Claims:

Please cancel claims 31-32, amend claim 49 and add new claims 52-58. This listing of claims will replace all prior versions, and listings, of claims in the application:

1-28. (Canceled)

29. (Previously Presented) A method of producing L-β-lysine, comprising:

(a) culturing a prokaryotic host cell comprising an expression vector that encodes lysine 2,3-aminomutase in the presence of L-lysine, wherein the cultured host cell expresses lysine 2,3-aminomutase, and

(b) isolating L-β-lysine from the cultured host cells.

30. (Previously Presented) A method of producing L-β-lysine, comprising:

(a) incubating L-lysine in a solution containing substantially pure lysine 2,3-aminomutase, said solution containing all cofactors required for lysine 2,3-aminomutase activity; and

(b) isolating L-β-lysine from the incubation solution.

31-35. (Canceled)

36. (Previously Presented) The method of claim 29 wherein the vector that encodes lysine 2,3-aminomutase has a nucleic acid sequence of SEQ ID NO: 3.

37. (Previously Presented) The method of claim 29 wherein the isolated L-β-lysine is enantiomerically pure.

38. (Previously Presented) The method of claim 30 wherein the isolated L-β-lysine is enantiomerically pure.

39. (Previously Presented) The method of claim 30 wherein the cofactors required for lysine 2,3-aminomutase activity comprise:

(i) at least one of ferrous sulfate or ferric ammonium sulfate;

(ii) pyridoxal phosphate;

(iii) at least one of dehydrolipoic acid, glutathione or dithiothreitol;

(iv) S-adenosylmethionine; and

(v) sodium dithionite.

40. (Previously Presented) A method of producing L-β-lysine, comprising:

(a) immobilizing lysine 2,3-aminomutase on a suitable support;

(b) activating the lysine 2,3-aminomutase with cofactors required for lysine 2,3-aminomutase activity; and

(c) contacting L-lysine with the immobilized lysine 2,3-aminomutase to produce L-β-lysine.

41. (Previously Presented) The method of claim 40 wherein the L-lysine is contacted with the immobilized lysine 2,3-aminomutase for a sufficient amount of time to produce enantiomerically pure L-β-lysine.

42. (Previously Presented) The method of claim 37 further comprising separating the L-β-lysine from the L-lysine.

43. (Previously Presented) The method of claim 42 wherein the separation of the L-β-lysine from the L-lysine is achieved using high performance chromatography.

44. (Previously Presented) The method of claim 37 wherein the process is a continuous process.

45. (Previously Presented) The method of claim 37 wherein the cofactors required for lysine 2,3-aminomutase activity comprise:

(i) at least one of ferrous sulfate or ferric ammonium sulfate;

(ii) pyridoxal phosphate;

(iii) at least one of dehydrolipoic acid, glutathione or dithiothreitol;

(iv) S-adenosylmethionine; and

(v) sodium dithionite.

46. (Previously Presented) The method of claim 37, wherein the lysine 2,3-aminomutase has an amino acid sequence selected from the group consisting of (i) SEQ ID NO: 4-and (ii) a conservative amino acid variant of SEQ ID NO: 4.

47. (Previously Presented) A method of producing L-β-lysine, comprising:

(a) incubating L-lysine in a solution containing purified lysine 2,3-aminomutase, wherein the lysine 2,3-aminomutase has an amino acid sequence selected from the group consisting of (i) SEQ ID NO: 4, and (ii) a conservative amino acid variant of SEQ ID NO: 4, said solution containing all cofactors required for lysine 2,3-aminomutase activity; and

(b) isolating L-β-lysine from the incubation solution.

48. (Previously Presented) The method of claim 47, wherein step (b) further comprises isolating L-β-lysine from L-lysine via chromatography.

49. (Currently Amended) A method of producing L-β-lysine, comprising:

(a) incubating L-lysine in a solution containing purified lysine 2,3-aminomutase other than that from *Clostridium subterminale* SB4, the lysine 2,3-aminomutase having an iron-sulfur cluster and said solution containing all cofactors required for lysine 2,3-aminomutase activity; and

(b) isolating L-β-lysine from the incubation solution.

50. (Previously Presented) The method of claim 49 wherein the isolated L-β-lysine is enantiomerically pure.

51. (Previously Presented) The method of claim 49 wherein the cofactors required for lysine 2,3-aminomutase activity comprise:

(i) at least one of ferrous sulfate or ferric ammonium sulfate;

(ii) pyridoxal phosphate;

(iii) at least one of dehydrolipoic acid, glutathione or dithiothreitol;

(iv) S-adenosylmethionine; and

(v) sodium dithionite.

52. (New) The method of claim 29 wherein the prokaryotic host cell is cultured in the presence of cobalt.

53. (New) The method of claim 29 wherein the lysine 2,3-aminomutase is a prokaryotic lysine 2,3-aminomutase.

54. (New) The method of claim 30 further comprising purifying the lysine 2,3-aminomutase in the presence of L-lysine to obtain substantially pure lysine 2,3-aminomutase.

55. (New) The method of claim 30 further comprising purifying the lysine 2,3-aminomutase in the presence of cobalt to obtain substantially pure lysine 2,3-aminomutase.

56. (New) The method of claim 30 further comprising purifying the lysine 2,3-aminomutase under anaerobic conditions to obtain substantially pure lysine 2,3-aminomutase.

57. (New) The method of claim 30 wherein the lysine 2,3-aminomutase is a prokaryotic lysine 2,3-aminomutase.

58. (New) A method of producing L-β-lysine, comprising:

(a) incubating L-lysine in a solution containing substantially pure lysine 2,3-aminomutase having an iron-sulfur cluster, said solution containing all cofactors required for lysine 2,3-aminomutase activity; and

(b) isolating L-β-lysine from the incubation solution.